\_\_\_\_\_\_

Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Anne Corrigan

Timestamp: [year=2008; month=4; day=9; hr=11; min=59; sec=37; ms=288; ]

\_\_\_\_\_\_

## Validated By CRFValidator v 1.0.3

Application No: 10085783 Version No: 5.1

Input Set:

Output Set:

**Started:** 2008-04-09 11:43:43.350

Finished: 2008-04-09 11:53:29.255

**Elapsed:** 0 hr(s) 9 min(s) 45 sec(s) 905 ms

Total Warnings: 2

Total Errors: 0

No. of SeqIDs Defined: 58994

Actual SeqID Count: 58994

Error code		or code	Error Description									
	W	213	Artificial	or	Unknown	found	in	<213>	in	SEQ	ID	(58993)
	W	213	Artificial	or	Unknown	found	in	<213>	in	SEQ	ID	(58994)

## SEQUENCE LISTING

```
<110> C.C.Liew,
     H. Zhang
     W. Marshall
<120> Compositions and Methods Relating to Osteoarthritis
<130> 4231/2002
<140> US 10/085,783
<141> 2002-02-28
<150> US 60/305,340
<151> 2001-07-13
<150> US 60/275,017
<151> 2001-03-12
<150> US 60/271,955
<151> 2001-02-28
<160> 58994
<170> FastSEO for Windows Version 4.0
<210> 1
<211> 377
<212> DNA
<213> Homo sapiens
<400> 1
eggaggtgea ggteetggtg ettgatggte gaggeeatet eetgggeege etggegeaat 60
teegtggeta aacaggtaet getgggeegg aaggtggtgg tegtaegetg tgaaggeate 120
accatttctg gcaatttcta cagaaccaag ttgaagtacc tggctttcct ccccaagcgg 180
atgaacacca accetteeeg gggeeectat ceettteegg geeecaagee gatttttttg 240
ggcgacccgg gcggggattt ctcccaaaaa accaagcagg ccaggccgtc tctgaccgtt 300
aagggtgttt acggaatcca ccgccatcga atgaaaagcg atgtgttcct gctgcctatg 360
gtcgtcgtac taatgca
                                                                   377
<210> 2
<211> 209
<212> DNA
<213> Homo sapiens
<400> 2
ggaaaggaaa gctgtgggac catcctggca accccggtgt ttggctgggt tctagcgtag 60
eggtetgtat teggeeggtg ggggaeettg egteggagtg ggagggeeag tttgeaecea 120
agaggtggaa gaggacgggc tttaggctgg aagcgcctta gaggagccat ttttcccagg 180
                                                                   209
atgcctgggt tgcttttata gtgtaaccc
<210> 3
<211> 499
<212> DNA
<213> Homo sapiens
```

<400> 3

```
tttgatggcg tgatgtctca cagaaagttc tccgctccca gacatgggtc cctcggcttc 60
ctgcctcgga agcgcagagc aggcatcgtg ggaaggtgaa gagcttccct aaggatgacc 120
cgtccaagcc ggtccacctt acagccttcc tgggatacaa ggctggcatg actcacatcg 180
tgcggggagt cgacaggccc ggatcccagg tgtaacacag aaggaggtgg tgtagagctc 240
tttccccatt tgagacacac cacctatggt gtttgtggac tttgtggtcc tacgtggaca 300
cetetegagg teteegeace etacaagaet gtettttget gageacatea gtgatgattg 360
cagaggegtt tetatatgaa tttgcataat etaagaggag getttaecag taetteagae 420
atgcaggatg aggatgcaga gcagctgaga ggactcagca gcatgagaga tctccaagtc 480
atcgtgtcat tgccacacc
                                                                 499
<210> 4
<211> 406
<212> DNA
<213> Homo sapiens
<400> 4
aaggaaatgg ctacccaact tgccttcatg cgcctgctgg ccaactatgc ctctcagaac 60
atcacctacc actgcaagaa cagcattgca tacatggatg aggagactgg caacctgaaa 120
aaggetgtea ttetacaggg etetaatgat gttgaaetgt tgetgaggge aacageaggt 180
tcacttacac ttgttcttgt agggtgggtg ctttaaaagg gcaaattgat ggggggaggc 240
acatattcga tcacaacaca tagagcctac agcttgcctt cctttgtatt cgccacttgg 300
gactaggttg gcatcgcccg ggtttcttgg ggactgggcc agtcttcaca tagaaagctc 360
                                                                 406
atatccatag aaaggtagat tttggatact ccttcttttg ctacgc
<210> 5
<211> 440
<212> DNA
<213> Homo sapiens
<400> 5
gagacttaga gccaaactgt ttaagctgta tcatcccaac aaagtatcct ttcatgaacg 60
gcagcaggtt ccacaagcac aaactttaca catttgtaca cttttgaaat gcactacatt 180
aacacattag agcacacatt tgaaatacag gcttctttac atacactgag aggttataca 240
cactcaqttt cacacqqqca cactctatac ctctctaaaq qtaatatctc aqqtctctat 300
aggcagagta ttttactctc taaatctgcc tctctgacca caaaaaaaaa aaaaacctgg 360
ggggtccttc tgggcgccgg ggcccatcga tttccacccg ggggggacca ggaagttccc 420
                                                                 440
caatcgccta tgtagtcata
<210> 6
<211> 403
<212> DNA
<213> Homo sapiens
<400> 6
aaaaaatagt tttttcatta gtatttctcg ggaggaccca aaagttaagg tcagcttgtt 60
cactgtaatt tctggaagga gttcactcag accttcctga attcagatca tctcagaagt 120
cttgagggaa atcttgcgaa accctcgttt gaggacttat gttagtttat tgccacctca 180
cttggtgcac cgagaactta cttccttgga ttaggtcact tctttgattt ctaataggat 240
gacttccaga gagtgagatt tgttatgtct ggcttataaa ggtaaatata aatatataca 300
tacttaatct aaaaaaaaa aaaaacctcg ggggtctttt tggacgccgg ggcccattcg 360
                                                                 403
attccccccg ggtggggcca aggtaagtac cccaatcgcc tat
<210> 7
<211> 231
<212> DNA
```

<213> Homo sapiens

```
<400> 7
ctttgcagat cttttccgac acacatgtct gaagacttat tttcaaagac agcacatttt 60
tggaaactaa tctcttttcc gtaatatttc ctttatttca atgattctca gaaggcccat 120
tcaaacaaac cccccattta agggtcttta gggttatagg ataaaattgg gctcctagag 180
tttagccccc agtagagcta ggaaagcccc actcgtatat ttgttccctt c
                                                                   2.31
<210> 8
<211> 114
<212> DNA
<213> Homo sapiens
<400> 8
tgcttctatt accaggctgt aatagctggt atagtttttt atttttctct taaggtgttc 60
ttttattagt ctgaggacag ccatttttt tttttaaggg aaaatatcag tcag
<210> 9
<211> 166
<212> DNA
<213> Homo sapiens
<400> 9
aagtatgatg cttttttggc ctcagagtct ctgatcaagc agattccacg aatcctcggc 60
ccaggtttaa ataaggcagg aaagttccct tccctgctca cacaaaaacg gaaacatggt 120
ggccaaagtg gattaggtga agtccccaat caagttttcc caatga
                                                                   166
<210> 10
<211> 297
<212> DNA
<213> Homo sapiens
<400> 10
tttttttttt gaataataga ggcaatattt ttaatcagtt cccagataag gtcaattaga 60
aacatgcact gctaaaatgc aagttacaat tcaaatggta ccataaataa ttagggtaca 120
cactgagcat tttcaggaat cagcttccat atcttgatcc actaaatggg gagggtcttc 180
aggacacggt cccttacccc tttatacaca gagggggagg aatttaaggg tcgcctcatg 240
gacactttac agtaaatcgg gacacattta tttgagtaca ctatttagac atgtaaa
<210> 11
<211> 218
<212> DNA
<213> Homo sapiens
<400> 11
cttggatgaa gagaggaccg tgagggtccc catgatgtcg gaccctaagg ctgttttacg 60
ctatggettg gattcagatc tcagetgcaa gattgeecag etgeeettga eeggaaggea 120
tgagtatcat ttttttcctg cccctgtaag tgcaccagaa tttgaccttg atagaggaga 180
gcctcaacct ccgagttcat tcatgacata gaccgaga
                                                                   218
<210> 12
<211> 232
<212> DNA
<213> Homo sapiens
<400> 12
cttcagggtg atgccaggtt ctatttggga atttatatac aacctgcttg ggtggagaag 60
ccattgtctt cggaaacctt ggtgttagtt gaacctgata agttactttt gtgacctgaa 120
```

```
gttcaccatt aaaaggggat tacccaaggc aaaatcatgg gattggtata aaagggattg 180
ttgggcaatc cattgcaata tattcaaaaa ttgaataatg ggccccataa aa
<210> 13
<211> 136
<212> DNA
<213> Homo sapiens
<400> 13
gcagaatcac atggcaaaag ctttgaaaat cataaagata taagttggtg tggctaagat 60
ggaaacaggg ctgattcttg attcccaatt ctcaactctc cttttcctat ttgaatttct 120
ttggggctgt agaaac
                                                                   136
<210> 14
<211> 251
<212> DNA
<213> Homo sapiens
<400> 14
cttttatgta tccatcccat ctaaaaactc ttcaaactcc acttgttcag tctgaaatgc 60
agctccctgt ccaagtgcct tggagaactc acagcagcac ggcttaatca aagggtttta 120
ccagcccttg gacactattg ggaggagggc aagagtacac caatttgtta aaagcaagga 180
aaccacagat gtctcttcac tagtcattta gagcatggtt atcatccaag actactctac 240
                                                                   251
cctgcaacaa t
<210> 15
<211> 251
<212> DNA
<213> Homo sapiens
<400> 15
cagagatgta ctgttattag ctgggaagac caattctaac agcaaataac agtctgagac 60
teeteataee eteagtggtt agaageatgt etetettgag etacagtaga gggggaggga 120
tttttgtgta gtcaagtcac catgctggaa tgtacactga ttcctctatg atgactgctt 180
aactccccac tgtcctgtcc cagagaggct ttccaatgta gctcagtaat tcctcttact 240
ctacagacag g
                                                                   251
<210> 16
<211> 162
<212> DNA
<213> Homo sapiens
<400> 16
attgcatgca agtttgctga gctgaaggaa aagattgatc gcccgttctg ggtaaaaatg 60
ctggaaggat gggccctaaa attcttgaag tctgggtgat gctgcccatt gttgatatgg 120
gtcccgggca agcccatttt tttttgagag gcttctcaga ct
                                                                   162
<210> 17
<211> 225
<212> DNA
<213> Homo sapiens
<400> 17
gcagctgaca gaggaagccg ctcaaatacc ttcacaataa atagtggcaa tatatatata 60
gtttaagaag gctctccatt tggcatcgtt taatttatat gttatgttct aagcacagct 120
ctcttctcct attttcatcc tgcaagcaac tcaaaatatt taaaataaag tttacatatg 180
tagttatttt caaatctttg ctttataagt attaagagat atgtg
                                                                   225
```

```
<210> 18
<211> 215
<212> DNA
<213> Homo sapiens
<400> 18
ccctgacagc cagtatattg acaacaggag tgtgaacagt gcagggcttc acacggtgca 60
gagageacce egactgaace accegeetga geagatagae teteacteaa gactacetea 120
tagogoacac coctogogaa aaccaccato ogottoagoo ttggcacctt agaatgtatt 180
                                                                   215
tagtacggct ttaagcagtg tgttattaca ccaca
<210> 19
<211> 285
<212> DNA
<213> Homo sapiens
<400> 19
gtcgccgctg cgaagggagc cgccgccatg tctgcgcatc tgcaatggat ggtcgtgcgg 60
aactgctcca gtttcctgat caagaggata agcagaccta cagcactgag cccaataact 120
tgaaggeeeg caatttette egetacaaeg gaettattea aegeeaagae tgtgggegtg 180
gagcccgcag accgacggca aaaggtgttc gttggtgggt caataagcgg agattcccgc 240
cagcggaagc cttccacctt ctatgtgcgg agcaccaata acaag
                                                                   285
<210> 20
<211> 307
<212> DNA
<213> Homo sapiens
<400> 20
ctcgtgccga attcggcacg agcggcacga gctggagttg gcgacttcga tattaacaag 60
gatggcggcg gccgcagcaa gtcggataag tcgggccaaa gctgggccta ccgtaagatt 120
cgcatccact tatgtcagcg ctcgcccggc agccagggcg tcagggactt cattgagaac 180
cgctacgtgg agctgaggag ggcgaatccc gacctaccca tcctaatccg cgaattctcc 240
gatgtgcagc ccaagctctg gcccgctacg catttggcca gagacgaatg tcctttgaca 300
                                                                   307
acttcag
<210> 21
<211> 138
<212> DNA
<213> Homo sapiens
<400> 21
gtcgcggcga catggccaaa cgtaccaaga aagtcgggat cgtcggtaaa tacggggacc 60
cgctattggg gccttccttc ggaaaattgt gtaaggaaaa ttgaaattca gccagcacgg 120
ccaagtgaca ctttgctc
                                                                   138
<210> 22
<211> 138
<212> DNA
<213> Homo sapiens
<400> 22
aaagaagtag caaattatct tcagtataat ccatggtaat gtatgcagta attcaaattg 60
atctctctct caatagggtt cttaacaatc ttaaacttgg aacatcaatg gttaattttc 120
                                                                   138
agggaccttt ttgggttt
```

```
<210> 23
<211> 132
<212> DNA
<213> Homo sapiens
<400> 23
ccctacgaca agaaaaagcg gatggtggtt tctgctgcct caaggtcgtg cgtcttaagg 60
cctacaagga aaggttggct aatcttgggc ggcttgctta agaaggttgc ttgaagtacc 120
aagcagttac aa
                                                                   132
<210> 24
<211> 247
<212> DNA
<213> Homo sapiens
<400> 24
ctcacgcaag catggttaac gtccctaaaa cccgccggac tttctgtaag aagtgtggca 60
agcaccaacc ccataaagtg acacagtaca aggagggcaa ggattctctg tacggccagg 120
gaaagccgcc ttatgacaag aagcagagat ggttattgtt ggcaaactaa gccgattttc 180
cggaaaaagg ctaaaactac acagaagagt tgtgctaagg ctctagtgcg ctgagcccca 240
                                                                   247
ctccaga
<210> 25
<211> 213
<212> DNA
<213> Homo sapiens
<400> 25
gtttgagaag tcccccctgc gggtgaagaa cttcgggatc tggctgcgct atgacttccg 60
gageggeace caeaacatgt acegggaata eegggaeetg aacaaegeag gegetgteae 120
ccagtgctac cgagacatgg gtgcccggca ccgcggccga gcccacttca ttcagatcat 180
gtaaggttga ggagatcgcg gccagcaagt gtc
                                                                   213
<210> 26
<211> 237
<212> DNA
<213> Homo sapiens
<400> 26
gaaaaatgag tatgtteett eteaggagag etettagaca acaagcaaag aatgteaatg 60
aaatttttaa gtgctcagtg ttccaggcca gagtacagag ggagggacac tttgctgtct 120
ttcagtcctt tctttttaat tgtattgatt cttttcctcg gtaataaata agtgcatact 180
agtgtttatt aaggaaagac aggtacaagc caaattgtat tcatttaatc atattcg
<210> 27
<211> 132
<212> DNA
<213> Homo sapiens
<400> 27
cctgtgccga aattcggcac gaggcttgcg ggaatcccat tcacccttgt ccttctcacc 60
taaatcctgc agcctggctt cctgacccaa tgaatccctt aggtgaattt cgtcagttca 120
agagcccctt gg
                                                                   132
<210> 28
<211> 110
```

<212> DNA

taattaaagc ttaatatat ttaagtgcac

210

```
<210> 33
<211> 275
<212> DNA
<213> Homo sapiens
<400> 33
ggcttgtgca gcaatggcca agatcaaggc tcgagatctt cgcgggaaga agaaggagga 60
gctgctgaaa cagctggacg acctgaaggt ggagctgttc ccagctgcgc gtcgccaaag 120
tacaggeggt eggeeteeaa getetetaag ateegagteg teeggaaate eattgeeegt 180
tttctaacag ttattaacca gactcagaag gaaacctcag gaaattctac aaggcaagag 240
                                                                   275
gtacaagccc ttggacctgc ggcctaagag acacg
<210> 34
<211> 131
<212> DNA
<213> Homo sapiens
<400> 34
cagtettget ttatteatee tecateteaa aatgaacttg gaattaaata ttgtaagata 60
tgtataatgc tggccatttt aaaggggttt tctcaaaagg taaacctttt gttattgact 120
tgtgtttttg c
                                                                   131
<210> 35
<211> 155
<212> DNA
<213> Homo sapiens
<400> 35
gtggcgataa gggagagccc ggtgaaaagg ggcccagagg tcttcctggc ttaaagggga 60
cacaatggat tgcaaggtct gcctgggtat cggctggtca accatgggtg atcaagggtg 120
                                                                   155
cctcctggct ccgtggggtc ctcttggtcc ttggg
<210> 36
<211> 150
<212> DNA
<213> Homo sapiens
<400> 36
gtcagctctg aatgaggagg ggagaagccc ctggggtctt tctttgaaag gaatcccgct 60
gettgaggge ttgeeteect teaatggtgt teegtttegt ttetttteee tgaeeggaet 120
tttttatatt caagaggtac ctattgcaaa
                                                                   150
<210> 37
<211> 199
<212> DNA
<213> Homo sapiens
<400> 37
ctgaaatcta gcagagttta actcttctgc ctccatgtct gtcacttata attcaggttc 60
tgctgttggc ttcagaacat gagcaggagg atcgttttat gctaggttat tgcaatcaat 120
ggtgaaactc aacttaggga aagggttcca atgtataagg caatgggctg cttctcccca 180
                                                                   199
atcctcccta acaatttgt
<210> 38
<211> 315
<212> DNA
```

<213> Homo sapiens

```
<400> 38
catcatctcc tgtgatcgag gatgctcgac acccacacaa ataccgcatg ctcatcgcaa 60
tggtggatgt gatctatcct gaatgtggcc cagccagtcc cagaccccga gttgtggccc 120
ttaatgccca caccttccct gcgtaatgga ggacaatttg tgatttccat taaggccaac 180
ctcaattact tcacaagcgt aagccgaggc cggtgttttc ctccgaagtg aaaaggatgc 240
aacaaggaga caatgaggcc gcaggagcag gttgaccctt agccaatatt aaagagacca 300
                                                                   315
attccgtgcc gtggg
<210> 39
<211> 160
<212> DNA
<213> Homo sapiens
<400> 39
ctaactcctc tgacacgtcc ttcgcagttc ttgagcgctt gtgcattact ttcctatgag 60
ggtctgtgct tcacagcaac ctgacagtgg cgttcggggg cgttgttccc gtacgtagag 120
gacgtggagc gtcacaacag gcagtggagc ccaacgtcag
                                                                   160
<210> 40
<211> 220
<212> DNA
<213> Homo sapiens
<400> 40
gtaagattgg cctaagagcc ctgcctgacc acgtgagcat tgtggaccca agatgagata 60
ctgcccacca cccccatctc agaacagaag ggtggggagc cagagcccgc ctgccatgcc 120
ccagccagtc ccaacagcat aacagggtct tcttggcagc tgtattctgg agtctggatg 180
ttgctctgta aggaccttta gtaaaatttt gtacaaagac
                                                                   220
<210> 41
<211> 355
<212> DNA
<213> Homo sapiens
<400> 41
cctcgtccga ggtcacacct tcaaatcctg tctctaaggc cagaaccaaa gtgggccttc 60
tgtgaacagg teettgggte aetteteace tteetaaget gatggaggee tggettagea 120
gccggaagcc taccaggcac tgtgcactat gagcatgtgt kcaaagagta ctctctctga 180
gccaaagcat gcctgctcat ctcccctgtg gcagaaggga gccctgaggg ggcctcttcc 240
ataggctggg cccgagcatt gagtccaggt ggctgggtag gctttggccg cacctcagag 300
gtccagacat actttgatga gtaatttccc catctgggta ctatttcctg gaagg
                                                                   355
<210> 42
<211> 330
<212> DNA
<213> Homo sapiens
<400> 42
gcctatctgg acgaagcagc tggcaacctc aagaaggccc tgctcatcca gggctccaat 60
gacgtggaga tccgggcaga gggcaatagc aggttcacgt acactgccct gaaggattgg 120
ctgcacgraa cataccggta agttgggcaa gacttttatc gagtaccggt cacagaagac 180
ctcacgcctc cccatcattt acatttcacc catggacata ggagggcccg agcaggaatt 240
cggttttgac atagggccgg tcttcttttt gtaaaacctg aacccagaaa caacacattc 300
tttgcaaacc aaaggaccaa gtatttccat
                                                                   330
```

```
<211> 210
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> 18
<223> n = A, T, C or G
<400> 43
gggacagtca gccgcatntt cttttgcgtc gcagccgagc cacatcgctc agacaccatg 60
gggaaggtga aggtcggrgt caacggattt ggtcgtattg ggcgcctggt caccagggct 120
gettttaact etggtaaagt ggatattttt gecateaatg accetteaat tgacetaact 180
                                                                   210
tacatggttt acatttccca atatgttccc
<210> 44
<211> 240
<212> DNA
<213> Homo sapiens
<400> 44
gtgaacactg agaatactga gtcaggatta gctcttcaca cttttccacc cttttctgag 60
catgtagttg gtgggttgac ctgtcaaggt catcctggat gatctagact tgtttctctc 120\,
ttcttttccc ttcagtatgc cttagggatc acagggatga atatagggtc accgtttata 180
cctaaggatc caccttatac tttccttagg gttcacacat tagggtttta aggaaagggg 240
<210> 45
<211> 139
<212> DNA
<213> Homo sapiens
<400> 45
acttctgaag atgtccttga tgtgcagctg gcattccttc gacttctctc caaccgagct 60
tcccagaaca tacacatatc actgccaaaa atagcattgc atacatggat caggccagtg 120
                                                                   139
ggaatgtaaa gaaggccct
<210> 46
```

<211> 320